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<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/904,009	CARVEY, PHILIP P.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jay P. Patel	2666	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/8/2005.
2. ☒ The allowed claim(s) is/are 2-4, 7-23 (now renumbered 1-20).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

## **DETAILED ACTION**

### **Examiner's Amendment**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jim Smith on 11/18/2005.

The specification has been amended as follows:

Claim 5 (cancelled).

Claim 6 (cancelled).

Claim 22, line 3, after "links" change "forming an" to become --forming a Gamma graph--,

Claim 23, line 2, after "links" change "forming an" to become --forming a Gamma graph--.

### ***Allowable Subject Matter***

1. Claims 2-4 and 7-23 (now renumbered 1-20) allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:

In regards to claim 2, the cited prior art either individually or in combination fail to disclose **A network for interconnecting devices external to the network, comprising: a plurality of switching nodes interconnected by links forming a Gamma graph inter connection network; a plurality of devices coupled to the network via a plurality of ports; and a plurality of buses, each switching node coupled to at least one of the plurality of buses, each bus capable of supporting a configurable number of ports, the bandwidth of port being inversely proportional to the number of ports configured per bus.** It is noted that the closes prior art, Dally (WO 99/11033), discloses a Network for interconnecting devices external to the network comprising a plurality of switching nodes interconnected by links forming Gamma graph interconnection network and a plurality of devices coupled to the network via a plurality of ports. In figure 1 Dally discloses a network comprising of multiple routers. The network further comprises of various regional network, various LANS and user terminals (see Figure 1 for details; see backbone network, regional network and LANS in figure 1). The routers in Dally's disclosure are connected in a Gamma graph interconnections because, the number of links connected to the router (for traffic coming in or going out), is greater than the maximum number of hops it would take for the router to reach any other router. Therefore, the radix of the network is greater than its diameter. For example a router in the backbone network illustrated in figure 1 has five links connected to it and it would take a maximum of three hops to reach any other router within the network from a particular router in the backbone network. It is noted however, that Dally

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does not disclose either individually or in combination the above-mentioned underlined limitation.

In regards to claim 3, the cited prior art either individually or in combination fail to disclose a plurality of switching nodes interconnected by links forming a the gamma graph interconnection wherein the Gamma graph interconnection network has a diameter (D) and a radix (.DELTA.), the radix greater than the diameter; the interconnection network being link fault tolerant by providing. DELTA. -1 alternative paths between any two external links, packets alternatively routed between external links over one of the. DELTA. -1 paths through the interconnection network having a hop distance greater than the diameter. It is noted that the closes prior art, Dally (WO 99/11033), discloses a Network for interconnecting devices external to the network comprising a plurality of switching nodes interconnected by links forming Gamma graph interconnection network and a plurality of devices coupled to the network via a plurality of ports. In figure 1 Dally discloses a network comprising of multiple routers. The network further comprises of various regional network, various LANS and user terminals (see Figure 1 for details; see backbone network, regional network and LANS in figure 1). The routers in Dally's disclosure are connected in a Gamma graph interconnections because, the number of links connected to the router (for traffic coming in or going out), is greater than the maximum number of hops it would take for the router to reach any other router. Therefore, the radix of the network is greater than its diameter. For example a router in the backbone network illustrated in figure 1 has five links connected to it and it would

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take a maximum of three hops to reach any other router within the network from a particular router in the backbone network. It is noted however, that Dally does not disclose either individually or in combination the above-mentioned underlined limitation.

In regards to claim 4, the cited prior art either individually or in combination fail to disclose **a plurality of switching nodes interconnected by links forming a Gamma graph interconnection network, wherein each switching node is interconnected to a subset of adjacent switching nodes, each switching node having a bidirectional interconnection with one of the adjacent switching nodes with the remaining interconnections being primarily unidirectional.** It is noted that the closes prior art, Dally (WO 99/11033), discloses a Network for interconnecting devices external to the network comprising a plurality of switching nodes interconnected by links forming Gamma graph interconnection network and a plurality of devices coupled to the network via a plurality of ports. In figure 1 Dally discloses a network comprising of multiple routers. The network further comprises of various regional network, various LANS and user terminals (see Figure 1 for details; see backbone network, regional network and LANS in figure 1). The routers in Dally's disclosure are connected in a Gamma graph interconnections because, the number of links connected to the router (for traffic coming in or going out), is greater than the maximum number of hops it would take for the router to reach any other router. Therefore, the radix of the network is greater than its diameter. For example a router in the backbone network illustrated in figure 1 has five links connected to it and it would take a maximum of three hops to reach any other router within the network from a particular router in the backbone network. It is noted

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however, that Dally does not disclose either individually or in combination the above-mentioned underlined limitation.

In regards to claim 22, the cited prior art either individually or in combination fails to disclose, a plurality of switching nodes interconnected by links forming a Gamma graph interconnection network having a diameter (D) and a radix, the radix greater than the diameter; a plurality of devices coupled to the network via ports; and the interconnection network being link fault tolerant by providing radix-1 alternative paths between any two devices, packets alternatively routed between at least two devices over one of the radix-1 paths through the interconnection network having a hop distance greater than the diameter. It is noted that the closest prior art, Dally (WO 99/11033), discloses a Network for interconnecting devices external to the network comprising a plurality of switching nodes interconnected by links forming Gamma graph interconnection network and a plurality of devices coupled to the network via a plurality of ports. In figure 1 Dally discloses a network comprising of multiple routers. The network further comprises of various regional network, various LANS and user terminals (see Figure 1 for details; see backbone network, regional network and LANS in figure 1). The routers in Dally's disclosure are connected in a Gamma graph interconnections because, the number of links connected to the router (for traffic coming in or going out), is greater than the maximum number of hops it would take for the router to reach any other router. Therefore, the radix of the network is greater than its diameter. For example a router in the backbone network illustrated in figure 1 has five links connected to it and it would take a maximum of three hops to reach any other

router within the network from a particular router in the backbone network. It is noted however, that Dally does not disclose either individually or in combination the above-mentioned underlined limitation.

In regards to claim 23, the cited prior art either individually or in combination fails to disclose, **a plurality of switching nodes interconnected by links forming a Gamma graph interconnection network, each switching node interconnected to a subset of adjacent switching nodes, each switching node having a bidirectional interconnection with one of the adjacent switching nodes with the remaining interconnections being primarily unidirectional; a plurality of devices coupled to the network via ports; and packets routed among the plurality of devices by traversing one or more hops across the links.** It is noted that the closes prior art, Dally (WO 99/11033), discloses a Network for interconnecting devices external to the network comprising a plurality of switching nodes interconnected by links forming Gamma graph interconnection network and a plurality of devices coupled to the network via a plurality of ports. In figure 1 Dally discloses a network comprising of multiple routers. The network further comprises of various regional network, various LANS and user terminals (see Figure 1 for details; see backbone network, regional network and LANS in figure 1). The routers in Dally's disclosure are connected in a Gamma graph interconnections because, the number of links connected to the router (for traffic coming in or going out), is greater than the maximum number of hops it would take for the router to reach any other router. Therefore, the radix of the network is greater than its diameter. For example a router in the backbone network illustrated in figure 1 has five

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links connected to it and it would take a maximum of three hops to reach any other router within the network from a particular router in the backbone network. It is noted however, that Dally does not disclose either individually or in combination the above-mentioned underlined limitation.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPP 11/28/05  
Jay P. Patel  
Assistant Examiner  
Art Unit 2666

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